

### **REMARKS**

In the Office Action, the Examiner rejected claims 1-27. By this paper, the Applicant hereby cancels claims 41-45, amends claim 1, and adds new claims 46-56 for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. In view of the foregoing amendments and the following remarks, the Applicant respectfully requests reconsideration and allowance of all pending claims.

### **Rejections Under 35 U.S.C. § 102**

Claims 1-2, 10-11, and 16 were rejected under U.S.C. §102(a) as being anticipated by Linn et al. (U.S. Patent No. 6,143,376, hereinafter "Linn"). Of these, claim 1 is the only independent claim. The Applicant respectfully traverses this rejection.

### ***Legal Precedent and Guidelines***

First, the pending claims must be given an interpretation that is reasonable and consistent with the *specification*. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); see also *In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); see also M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is "the primary basis for construing the claims." See *Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*). One should rely *heavily* on the written description for guidance as to the meaning of the claims. See *id.*

Second, interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. See *In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. "The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." See *Collegenet, Inc. v.*

*ApplyYourself, Inc.*, No. 04-1202, -1222, 1251, at 8-9 (Fed. Cir. August 2, 2005) (quoting *Phillips*, No. 03-1269, -1286, at 16). The Federal Circuit has made clear that derivation of a claim term must be based on “usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art.” *See id.*

Third, anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Fourth, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in

original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.* Regarding functional limitations, the Examiner must evaluate and consider the functional limitation, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. *See* M.P.E.P. § 2173.05(g); *In re Swinehart*, 169 U.S.P.Q. 226, 229 (C.C.P.A. 1971); *In re Schreiber*, 44 U.S.P.Q.2d 1429, 1432 (Fed. Cir. 1997). If the Examiner believes the functional limitation to be inherent in the cited reference, then the Examiner “must provide some evidence or scientific reasoning to establish the reasonableness of the examiner’s belief that the functional limitation is an inherent characteristic of the prior art.” *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Inter. 1986).

***Features of independent claim 1 missing from Linn reference***

Claim 1 recites a method of coating a CMC fiber comprising “passing a flow of fiber coating reactant through said reaction zone; and disrupting at least a portion of said flow of reactant from a flow path substantially parallel to said fiber path to create a mixing flow adjacent said fiber.” For example, the present application discloses “disrupters 50 force gas to flow 48 through the reactor chamber in a convoluted or turbulent pathway, rather than parallel to the tube axis.” Application, page 5, lines 7-8. By further example, the present application discloses “a plurality of reactant injection inlets 18 intermittently spaced along the longitudinal axis 62 of the chamber” and “directed into the chamber at an angle to the fiber tow 26 to create a turbulent mixing flow adjacent to the tow 26.” Application, FIG. 8; page 7, lines 15-18. Another example disclosed in the present application includes “a set of rollers 64 that convey the fiber tow 26 repeatedly back and forth across the reactor longitudinal axis 62 to interact with the reactant gas flow 48.” Application, FIG. 9, page 7, lines 21-23. Although the Applicant does not suggest or intend that these examples be read into the claims, the Applicant stresses that these examples provide context and meaning to the independent claim 1.

In the Office Action, the Examiner specifically pointed to a citation in the Linn reference, which is reproduced below with emphasis added to relevant portions of the text.

According to the present invention, provision is also made for the short sized fiber bundles to be exposed to a high frequency field in a reactor. When the short fiber bundle enters the high-frequency zone of the reactor, the coating is suddenly decomposed into gaseous products. The resulting gas phase also forces the individual fibers apart. Subsequently, the fibers thus separated are 1) exposed to at least one coating agent present in the gas phase, and 2) CVD coated in the high-frequency field. The method according to the present invention also makes it possible to coat the cut surfaces of short fibers made by cutting up coated endless fibers. These cut fibers are also CVD-coated in a high frequency field with at least one of the coating agents present in the gas phase. This seals the cut surfaces so that they are unable to react with the composite matrix and are at the same time protected from oxidation. Linn et al., col. 1 line 64-col. 2 line 11 (emphasis added)

The Linn reference teaches a method of decoating the already coated short fibers and then further coating them using CVD. Linn does not teach or even suggest a method of coating comprising disrupting at least a portion of said flow of reactant from a path substantially parallel to said fiber path to create a mixing flow adjacent said fiber.

Further, Linn specifically recites:

Reactor 30 has an angle of inclination of 45° and a rotational speed  $n_3$  of 5 to 10 rpm. A microwave field is created inside reactor 30. At the same time, reaction gas is introduced into reactor 30 through opening 32, and exits via opening 31. When the fiber bundles enter the microwave zone, the clinging coating (in commercially available fiber bundles) or the clinging matrix (in recycle fiber bundles) breaks down suddenly into gaseous products, so that the individual fibers are separated from each other. The resulting gas phase forces the individual fibers further apart and exits the reactor. The individual fibers are then CVD-coated by the reaction gas. Reactor 30 is heated by the microwave heater with a

homogeneous field and/or by inductive heating. Linn et al., col. 4 line 63- col. 5 line 8 (emphasis added).

Linn specifically teaches the breaking up of short fibers and then subsequently coating the same by CVD using a reaction gas. There is no mention of disrupting the flow of reaction gas to create a mixing flow in the process of coating.

For these reasons, among others, the Linn reference fails to teach or suggest each and every feature recited in claim 1. Hence, the Examiner has failed to establish a *prima facie* case of anticipation.

***Features of claim 10 missing from Linn reference***

Claim 10 recites, *inter alia*, “said fiber coating reactant comprises a hydrocarbon.” Linn does not teach a fiber coating reactant including a hydrocarbon. For this reason, among others, the Linn reference fails to teach or suggest each and every feature recited in claim 10. Hence, the Examiner has failed to establish a *prima facie* case of anticipation.

**Rejections Under 35 U.S.C. § 103(a)**

The Examiner rejected claims 3-9, 12-15 and 17-27 under 35 U.S.C. §103(a) as being unpatentable over Linn. The Applicant respectfully traverses this rejection.

***Legal Precedent and Guidelines***

The pending claims must be given an interpretation that is reasonable and consistent with the *specification*. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); see also *In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); see also M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is “the primary basis for construing the claims.” See *Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*).

One should rely *heavily* on the written description for guidance as to the meaning of the claims. *See id.*

Interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. *See In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. “The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation.” *See Collegenet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 75 U.S.P.Q.2d 1733, 1738 (Fed. Cir. 2005) (quoting *Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1326). The Federal Circuit has made clear that derivation of a claim term must be based on “usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art.” *See id.*

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). In addressing obviousness determinations under 35 U.S.C. § 103, the Supreme Court in *KSR International Co. v. Teleflex Inc.*, No. 04-1350 (April 30, 2007), reaffirmed many of its precedents relating to obviousness including its holding in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). In *Graham*, the Court set out an objective analysis for applying the statutory language of §103:

Under §103, the scope and content of the prior art are to be determined, differences between the prior art and the claims at issue are to be ascertained, and the level of ordinary skill in the pertinent art are to be resolved. Against this background the obviousness or non-obviousness of the subject matter is to be determined. Such secondary considerations as commercial success, long-felt but unresolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *KSR, slip op.* at 2 (citing *Graham*, 383 U.S. at 17-18).

In *KSR*, the Court also reaffirmed that “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *Id.* at 14. In this regard, the *KSR* court stated that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does ... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *Id.* at 14-15. Traditionally, to establish a *prima facie* case of obviousness, the CCPA and the Federal Circuit have required that the prior art not only include all of the claimed elements, but also some teaching, suggestion, or motivation to combine the known elements in the same manner set forth in the claim at issue. *See, e.g., ASC Hospital Systems Inc. v. Montifiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984) (holding that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination.); *In re Mills*, 16 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 1990) (holding that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination). In *KSR*, the court noted that the demonstration of a teaching, suggestion, or motivation to combine provides a “helpful insight” in determining whether claimed subject matter is obvious. *KSR, slip op.* at 14. However, the court rejected a *rigid* application of the “TSM” test. *Id.* at 11. In this regard, the court stated:

The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and explicit content of issued patents. The diversity of inventive pursuit and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. *Id.* at 15.

In other words, the *KSR* court rejected a rigid application of the TSM test which requires that a teaching, suggestion or motivation to combine elements in a particular manner must be explicitly found in the cited prior art. Instead, the *KSR* court favored a more expansive view of the sources of evidence that may be considered in determining an apparent reason to combine known elements by stating:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art all in order to determine whether there was an apparent reason to combine in the known elements in the fashion claimed in the patent at issue. *Id.* at 14.

The *KSR* court also noted that there is not necessarily an inconsistency between the idea underlying the TSM test and the *Graham* analysis, and it further stated that the broader application of the TSM test found in certain Federal Circuit decisions appears to be consistent with *Graham*. *Id.* at 17-18 (citing *DyStar Textilfarben GmbH and Co. v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (2006) (“Our suggestion test is in actuality quite flexible and not only permits but *requires* consideration of common knowledge and common sense”); *Alza Corp. v. Mylan Labs, Inc.*, 464 F.3d 1286, 1291 (2006) (“There is flexibility in our obviousness jurisprudence because a motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires a teaching to combine ... “)).

Furthermore, the *KSR* court did not diminish the requirement for objective evidence of obviousness. *Id.* at 14 (“To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of

ordinary skill in the art would employ.”); *see also*, *In re Lee*, 61 U.S.P.Q.2d 1430, 1436 (Fed. Cir. 2002) (holding that the factual inquiry whether to combine references must be thorough and searching, and that it must be based on *objective evidence of record*).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The Federal Circuit has warned that the Examiner must not, “fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *In re Dembiczak*, F.3d 994, 999, 50 U.S.P.Q.2d 52 (Fed. Cir. 1999) (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983)).

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983); M.P.E.P. § 2145. Moreover, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); *see* M.P.E.P. § 2143.01(VI). If the proposed modification or combination would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984); *see* M.P.E.P. § 2143.01(V).

In addition, “it is well established that product claims may include process steps to wholly or partially define the claimed product.” *In re Luck*, 177 U.S.P.Q. 523, 525 (C.C.P.A. 1973). To the extent that “these process limitations distinguish the *product* over the prior art, they must be given the same consideration as traditional product characteristics.” *Id.* (emphasis in original). These claims are not product-by-process claims. A product-by-process claim defines a product by laying out the method steps required to produce the product. *See Atlantic Thermoplastics Co. Inc. v. Faytex Corp.*, 23 U.S.P.Q.2d 1481, 1490 (Fed. Cir. 1992). This is far different from a mixed limitation or hybrid claim that includes a functional limitation, but does not define the product solely by method steps. The general rule for interpreting hybrid claims is that all limitations are to be given patentable effect. *See In re Angstadt*, 190 U.S.P.Q. 214, 217 (C.C.P.A. 1976).

In order to rely on equivalence as a rational supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. *In re Ruff*, 256 F.2d 590, 118 U.S.P.Q. 340 (CCPA 1958); *see also* M.P.E.P. § 2144.06.

#### ***Deficiencies of rejection***

Claim 12 recites a fiber coating reactant comprising boron trichloride and ammonia. Linn fails to teach or suggest a boron trichloride or ammonia fiber coating reactant.

Similarly, claims 13 and 14 recite a fiber coating reactant including boron trichloride, ammonia, and a silicon precursor. Linn does not teach or suggest such a fiber coating reactant.

Further, claims 22, 23 and 24 recite fiber tows wherein tows are separated at various distances apart. Since Linn does not teach or suggest a method of coating fibers available in tows, the claims are believed to be patentable.

In addition, claims 3-9, 12-15 and 17-27 all depend on independent claim 1. As discussed in detail above, the Linn reference fails to teach or suggest a number of features set forth in claim 1. The Applicant stresses that the Examiner has not provided any object evidence, articulated reasoning with some rational underpinning, and a thorough and search factual inquiry regarding obviousness, as discussed above with reference to *KSR*. Accordingly, the Applicant respectfully stresses that the Linn reference cannot support a *prima facie* case of obviousness of the present claims.

#### **Claim Rejections under Doctrine of Obviousness-Type Double Patenting**

In the Office Action, the Examiner provisionally rejected claims 1-27 under the judicially created doctrine of obviousness-type double patenting over claims 1-53 of copending Application No. 11/263715. Although Applicant does not agree that the present claims 1-27 are obvious over claims 1-53 of the copending application, the Applicant is willing to file a terminal disclaimer if necessary when the claims are indicated as allowable.

#### **New claims**

As summarized above, the Applicant hereby adds new claims 46-56 to recite additional features missing from the cited reference. The Applicant notes that support can be found for these new claims in numerous locations throughout the original specification. For example, claims 46, 47 and 48 are supported by FIGS. 2, 5, 6, 7 and 8 and lines 5-9 on page 5, and lines 10-15 on page 7. Similarly, claim 51 is supported by FIG. 8 and lines 15-20 on page 7. Claims 53 and 54 are supported by FIG. 9 and lines 21-24 page 7.

**Conclusion**

In view of the remarks and amendments set forth above, Applicant respectfully requests allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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